

(f) Each element of the system must be serviceable at the end of the test.

[Doc. No. 1437, 29 FR 8258, July 1, 1964, as amended by Amdt. 31-2, 30 FR 3377, Mar. 13, 1965; Amdt. 31-7, 61 FR 18223, Apr. 24, 1996; 61 FR 20877, May 8, 1996]

#### § 31.49 Control systems.

(a) Each control must operate easily, smoothly, and positively enough to allow proper performance of its functions. Controls must be arranged and identified to provide for convenience of operation and to prevent the possibility of confusion and subsequent inadvertent operation.

(b) Each control system and operating device must be designed and installed in a manner that will prevent jamming, chafing, or interference from passengers, cargo, or loose objects. Precaution must be taken to prevent foreign objects from jamming the controls. The elements of the control system must have design features or must be distinctly and permanently marked to minimize the possibility of incorrect assembly that could result in malfunctioning of the control system.

(c) Each balloon using a captive gas as the lifting means must have an automatic valve or appendix that is able to release gas automatically at the rate of at least three percent of the total volume per minute when the balloon is at its maximum operating pressure.

(d) Each hot air balloon must have a means to allow the controlled release of hot air during flight.

(e) Each hot air balloon must have a means to indicate the maximum envelope skin temperatures occurring during operation. The indicator must be readily visible to the pilot and marked to indicate the limiting safe temperature of the envelope material. If the markings are on the cover glass of the instrument, there must be provisions to maintain the correct alignment of the glass cover with the face of the dial.

[Doc. No. 1437, 29 FR 8258, July 1, 1964, as amended by Amdt. 31-2, 30 FR 3377, Mar. 13, 1965]

#### § 31.51 Ballast.

Each captive gas balloon must have a means for the safe storage and con-

trolled release of ballast. The ballast must consist of material that, if released during flight, is not hazardous to persons on the ground.

#### § 31.53 Drag rope.

If a drag rope is used, the end that is released overboard must be stiffened to preclude the probability of the rope becoming entangled with trees, wires, or other objects on the ground.

#### § 31.55 Deflation means.

There must be a means to allow emergency deflation of the envelope so as to allow a safe emergency landing. If a system other than a manual system is used, the reliability of the system used must be substantiated.

[Amdt. 31-2, 30 FR 3377, Mar. 13, 1965]

#### § 31.57 Rip cords.

(a) If a rip cord is used for emergency deflation, it must be designed and installed to preclude entanglement.

(b) The force required to operate the rip cord may not be less than 25, or more than 75, pounds.

(c) The end of the rip cord to be operated by the pilot must be colored red.

(d) The rip cord must be long enough to allow an increase of at least 10 percent in the vertical dimension of the envelope.

#### § 31.59 Trapeze, basket, or other means provided for occupants.

(a) The trapeze, basket, or other means provided for carrying occupants may not rotate independently of the envelope.

(b) Each projecting object on the trapeze, basket, or other means provided for carrying occupants, that could cause injury to the occupants, must be padded.

#### § 31.61 Static discharge.

Unless shown not to be necessary for safety, there must be appropriate bonding means in the design of each balloon using flammable gas as a lifting means to ensure that the effects of static discharges will not create a hazard.

[Amdt. 31-2, 30 FR 3377, Mar. 13, 1965]